AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1.(original) A catalyst for decomposition of hydrocarbons, comprising porous oxide particles containing magnesium and aluminum, and fine metallic nickel particles which are present in the vicinity of surface of the respective porous oxide particles, and have an average particle diameter of 1 to 10 nm, said catalyst having a nickel content of 0.15 to 12% by weight based on the weight of the catalyst and a molar ratio of nickel to a sum of magnesium, nickel and aluminum of 0.001 to 0.12 in which a molar ratio of magnesium to aluminum (Mg:Al) is 4:1 to 1.5:1.

2.(original) A catalyst for decomposition of hydrocarbons according to claim 1, wherein said catalyst has a specific surface area value of 20 to 400 m2/g.

3.(original) A catalyst for decomposition of hydrocarbons according to claim 1, wherein said catalyst is produced by heat-calcining laminar composite hydroxide-type particles comprising composite hydroxide core particles containing magnesium and aluminum and a composite hydroxide layer containing magnesium, nickel and aluminum, which is formed on surface of the respective composite hydroxide core particles, and then heat-reducing the obtained oxide particles to transform nickel oxide contained in the oxide particles into fine metallic nickel particles.

4.(original) A catalyst for decomposition of hydrocarbons, having fine metallic nickel particles of an average particle diameter of 1 to 10 nm and a nickel content of 0.15 to 12% by weight based on the weight of the catalyst, which is produced by heat-calcining laminar composite hydroxide-type particles comprising composite hydroxide core particles containing magnesium and aluminum and a composite hydroxide layer containing magnesium, nickel and aluminum which is formed on surface of the respective composite hydroxide core particles, and then heat-reducing the obtained oxide particles to transform nickel oxide contained in the oxide particles into fine metallic nickel particles.

5.(original) A catalyst for decomposition of hydrocarbons according to claim 4, wherein a molar ratio of nickel to a sum of magnesium, nickel and aluminum is 0.001 to 0.12.

6.(currently amended) A process for producing the catalyst for decomposition of hydrocarbons as claimed in claim 1~~ or 4~~, comprising:

mixing an anion-containing aqueous alkali solution, an aqueous magnesium salt solution and an aqueous aluminum salt solution with each other;

after adjusting a pH value of the mixed solution to 9.0 to 14, aging the resultant mixed solution at a temperature of 60 to 250°C to obtain a water suspension of composite hydroxide core particles containing magnesium and aluminum;

adding to the water suspension, an aqueous magnesium salt solution, an aqueous nickel salt solution and an aqueous aluminum salt solution, such that a molar ratio of a sum of magnesium, nickel and aluminum contained in these solutions to a sum of the magnesium and aluminum added upon production of the core particles is 0.05 to 0.45;

aging the resultant suspension at a pH value of 9.0 to 14 and a temperature of 60 to 250°C to conduct a growth reaction for forming a laminar composite hydroxide coating layer on surface of the respective core particles, thereby obtaining laminar composite hydroxide particles;

heat-calcining the laminar composite hydroxide particles at a temperature of 450 to 1,700°C to obtain oxide particles; and

then heat-reducing the thus obtained oxide particles at a temperature of 700 to 1,000°C under a reducing atmosphere.

7.(original) A process for producing hydrogen by subjecting a gas composed mainly of low-molecular hydrocarbons to steam reforming, comprising contacting the gas composed mainly of low-molecular hydrocarbons and steam each other in the presence of a catalyst for decomposition of hydrocarbons as claimed in claim 1 or 4, at a temperature

of 600 to 900°C, a molar ratio of steam to carbon (S/C) of 1.3 to 3.5 and a space velocity (GHSV) of 1,500 to 600,000 h-1.